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31 March 2004
File No. 28882-604

Boeing Realty Corporation
3855 Lakewood Boulevard
MC D001-0097
Long Beach, California 90806

Attention: Mr. Brian Mossman

Subject: Request for Closure and Replacement of Groundwater Monitoring Wells
TMW-01, TMW-02, TMW-08 and TMW-09, Boeing Realty Corporation,
Former C-6 Facility, Los Angeles, California

Dear Mr. Mossman:

Haley & Aldrich, Inc. (Haley & Aldrich) has prepared this work plan to close and replace groundwater monitoring wells (Wells) TMW-01, TMW-02, TMW-08 and TMW-09, located in the Lot 8 area of the Boeing Realty Corporation's (Boeing) former C-6 Facility (Site) in Los Angeles, California (Figure 1). These four wells are proposed for closure and replacement due to their proximity to a building scheduled for construction during the Summer of 2004 (Figure 2).

BACKGROUND

The four wells were installed in June 1998 by Kennedy/Jenks Consultants as part of a Site-wide groundwater assessment program, to facilitate sampling and measurement of groundwater conditions in the B-Sand unit of the Middle Bellflower Aquitard. All four wells proposed for closure and replacement are located within, or immediately adjacent to, the footprint of a new building proposed for construction on the Site during the summer of 2004. Copies of the well construction logs of the wells to be closed are included as Appendix A, and the well details are summarized in Table I.

OFFICES

Boston
Massachusetts

Cleveland
Ohio

Dayton
Ohio

Detroit
Michigan

Hartford
Connecticut

Kansas City
Kansas

Los Angeles
California

Manchester
New Hampshire

Newark
New Jersey

Portland
Maine

Rochester
New York

Santa Barbara
California

Tucson
Arizona

Washington
District of Columbia

Table I
Details of Monitoring Wells to be Closed

Well I.D.	Date Drilled	No. of Sampling Events	Casing Dia. (inches)	Meas. Pt. Elev. (feet msl)	Total Depth (feet bgs)	Screened Interval (feet bgs)
TMW-01	6/28/1998	12	2	56.46	91	66-86
TMW-02	6/28/1998	12	2	56.38	92	67-87
TMW-08	6/29/1998	10	2	53.99	89.5	61-81
TMW-09	6/29/1998	9	2	52.75	85	60-80

msl = Mean Sea Level

bgs = below ground surface

Note: These wells are part of the Site-wide monitoring well network and are scheduled to be sampled during the March 2004 Site-wide monitoring event. They will be replaced with wells to be installed outside the proposed building footprint at locations that meet the monitoring criteria of the Site-wide groundwater monitoring program.

The four wells are included in the Site-wide Groundwater Monitoring Plan (Haley & Aldrich, 2003a) which was approved by the California Regional Water Quality Control Board – Los Angeles Region (LARWQCB) on 28 May 2003. At this time, the design of the proposed Site building is evolving. An effort will be made to save these wells during building construction. However, if design constraints require that these wells be removed, replacement wells will be installed outside the proposed building footprint. The proposed locations of these replacement wells will be based on the monitoring criteria presented in the Site-wide Groundwater Monitoring Plan (Haley & Aldrich, 2003a) approved by the LARWQCB on May 28, 2003, as well as the building design and future land use constraints. The proposed locations of the four replacement wells, based on the proposed building footprint, are shown on Figure 2. If closure of any of the four existing wells is required, the proposed replacement strategy will be as follows:

- Groundwater monitoring well TMW-01 monitors the western extent of the Building 1/36 VOC groundwater plume in the Bellflower B-Sand. The replacement well (i.e., MWB027) will be moved approximately 60 feet west, to a landscaped area on the western side of the proposed building footprint. The new well location will meet the criteria of monitoring the western edge of the groundwater plume;
- Groundwater monitoring well TMW-02 monitors the Building 1/36 groundwater plume source area in the Bellflower B-Sand. The replacement well (i.e., MWB028) will be moved approximately 40 feet northeast, to the truck loading dock area on the eastern side of the proposed building footprint. The new well location will meet the criteria of monitoring the groundwater plume source area;
- Groundwater monitoring well TMW-08 monitors the downgradient extent of the Building 1/36 VOC groundwater plume in the Bellflower B-Sand. The replacement well (i.e., MWB029) will be moved approximately 20-feet north, to the truck loading dock area on the eastern side of the proposed building footprint. The new well location will meet the criteria of monitoring the downgradient extent of the groundwater plume; and

- Groundwater monitoring well TMW-09 monitors the crossgradient/downgradient extent of the Building 1/36 groundwater plume source area in the Bellflower B-Sand. The replacement well (i.e., MWB030) will be moved approximately 70 feet south, to a landscape area on the south side of the proposed building footprint. The new well location will meet the criteria of monitoring the lateral extent of the groundwater plume.

Due to the evolving building design, the proposed well locations may require further adjustment in the field. If further adjustment is required, Haley & Aldrich will verify that the monitoring criteria of the Site-wide Groundwater Monitoring Plan will be met by the revised location prior to installation.

The four replacement wells will be designed and installed in a manner similar to the wells being closed. The proposed replacement wells (i.e., MWB027, MWB028, MWB029 and MWB030, Figure 2) will be installed using hollow-stem auger to depths of 81 feet bgs with screened intervals of 20 ft (from 61 to 81 ft bgs) using 4 inch diameter, schedule 40, poly vinyl chloride (PVC) well casing and screen.

PROPOSED WELL CLOSURE PROCEDURE

The closure of the four proposed wells, if necessary, will proceed as follows:

Permitting – Prior to closure activities, well destruction permits will be obtained from the Los Angeles County Department of Health Services (LACDHS) for the proposed wells.

Groundwater Level Measurement – Measure the depth to groundwater in the wells to be closed from the top of casing using an electronic water level indicator. The measurement will be recorded in the field log.

Groundwater Sampling – Every well to be closed will be sampled during the March 2004 annual Site-wide groundwater monitoring event according to the procedures in the 2004 Groundwater Monitoring Work Plan (Haley & Aldrich, 2003b). Since the groundwater monitoring wells will likely be closed within 90 days of this sampling event, no further groundwater monitoring will be performed prior to closure.

Well Closure – The wells will be closed by overdrilling the well casing and filter pack to the total depth of each well according to LACDHS requirements. The boring will then be backfilled with neat cement grout using a tremie pipe from the bottom of the augers as the augers are withdrawn. The volume of cement pumped into each boring will be greater than or equal to the volume of the borehole. The level of cement in the boring will be topped off periodically until it sets to a depth of approximately 10 ft bgs. The top 10 ft of the boreholes will then be backfilled with granular bentonite to allow for Site redevelopment excavation and grading. Well closure work will be performed by a California-licensed well contractor under the oversight of a California-licensed professional engineer or registered geologist. Well closure activities will comply with LACDHS permit requirements and State of California water well standards (California Department of Water Resources, 1981 and 1990).

SCHEDULE

Well closure activities are planned to commence during the Summer of 2004 and replacement well installation activities may not be completed until Spring of 2005 due to the evolving Site redevelopment schedule. The replacement wells will most likely be installed following construction of the proposed building, parking, and landscape areas. Following well closure activities, a letter report will be submitted to the LARWQCB documenting the well closure activities within 60 days of the completion of field work. Replacement well installation activities will be discussed in the annual and semiannual groundwater monitoring reports.

Wastes generated by the well closure process will be containerized and profiled for subsequent disposal.

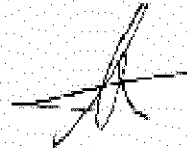
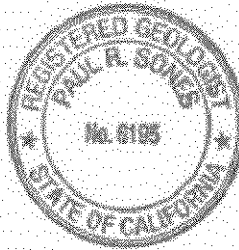
Haley & Aldrich's Site-Specific Health & Safety Plan (SHSP) and Addendums (Haley & Aldrich, 2001a, 2001b, & 2002) will be used for on-site personnel performing well closure activities. A copy of the SHSP has been previously submitted to the LARWQCB.

Should you have any questions concerning this well closure work plan or require additional information, please contact either of the undersigned.

Sincerely yours,
Haley & Aldrich, Inc.



Paul R. Sones, R.G.
Senior Hydrogeologist



Scott P. Zachary
Project Manager

Attachments:

Figure 1 – Site Location Map

Figure 2 – Groundwater Monitoring Wells to be Replaced

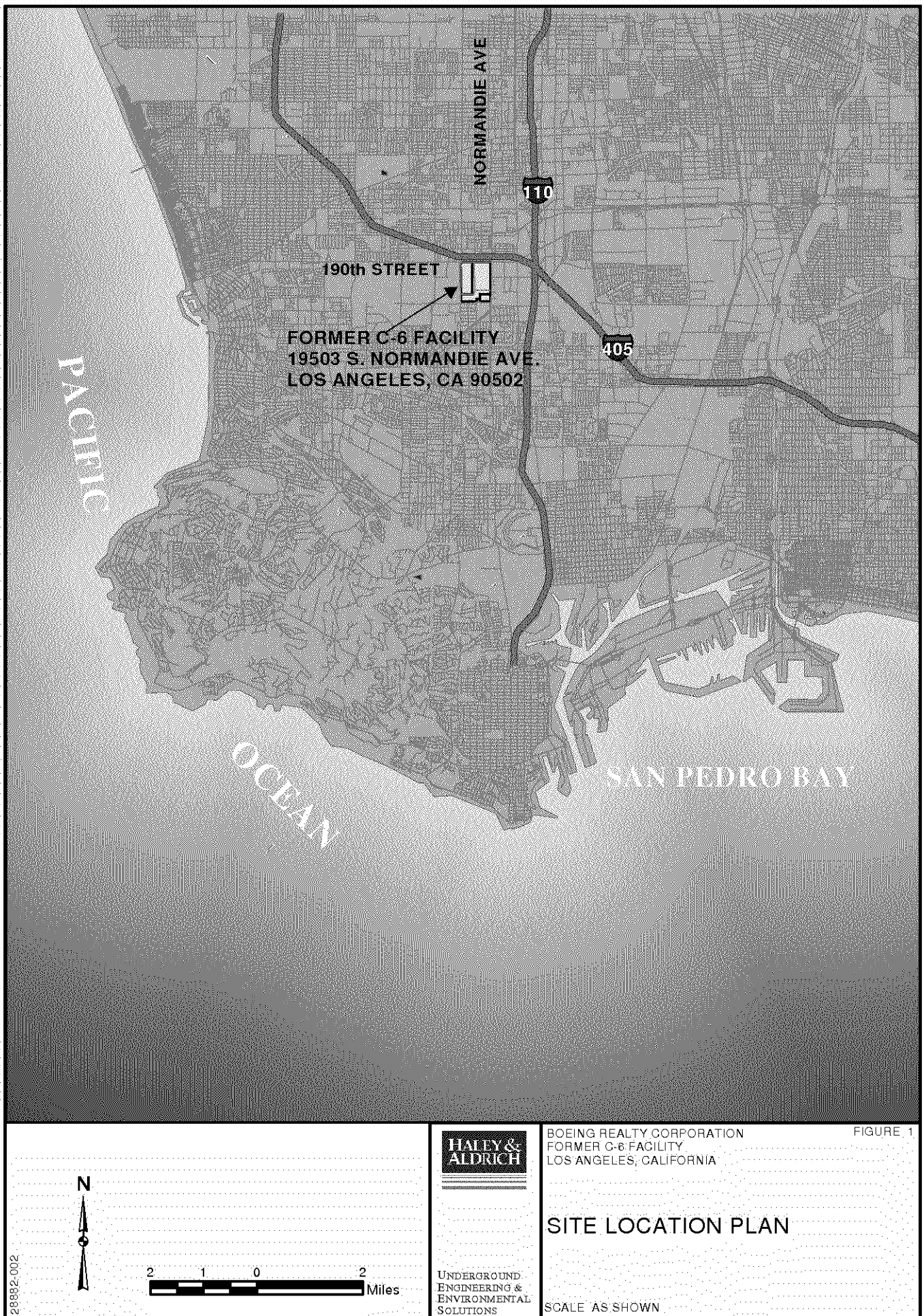
Appendix A - Well Construction Logs of Wells to be Closed

REFERENCES:

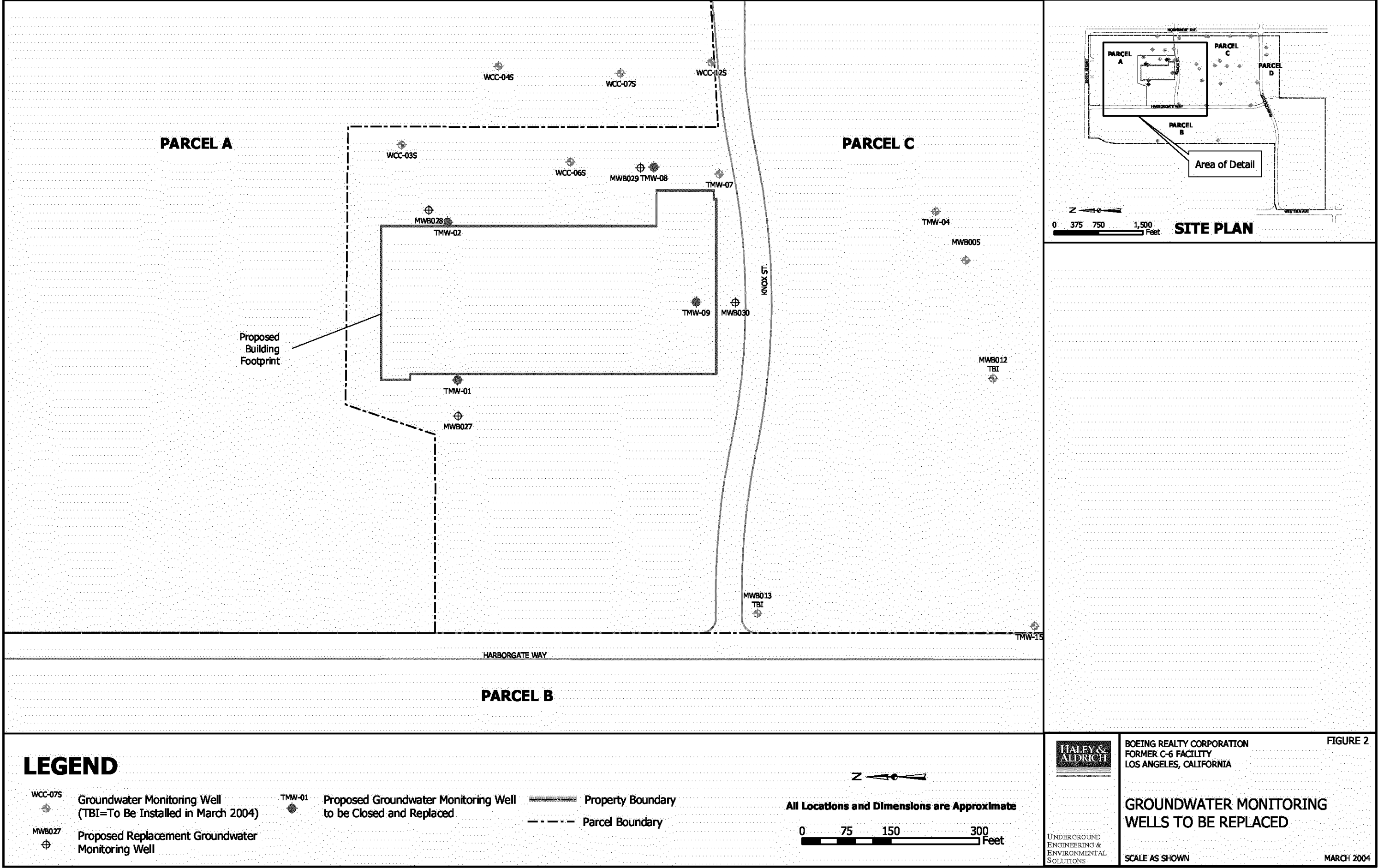
1. California Department of Water Resources, 1981 & 1990, *Water Well Standards: State of California (Bulletins 74-81 and 74-90)*.
2. Haley & Aldrich, Inc., 2001a, Site-Specific Health & Safety Plan for Boeing Realty Corporation Former C-6 Facility, 19503 South Normandie Avenue, dated 8 June 2001.
3. Haley & Aldrich, Inc., 2001b, Site-Specific Health & Safety Plan for Boeing Realty Corporation Former C-6 Facility, 19503 South Normandie Avenue, Addendum 1 dated 12 November 2001.
4. Haley & Aldrich, Inc., 2002, Site-Specific Health & Safety Plan for Boeing Realty Corporation Former C-6 Facility, 19503 South Normandie Avenue, Addendum 2 dated 30 October 2002.
5. Haley & Aldrich, Inc., 2003a, Site-wide Groundwater Monitoring Work Plan, Boeing Realty Corporation, Former C-6 Facility, Los Angeles, California, Prepared for Boeing Realty Corporation, Long Beach, California, dated 31 March, 2003.
6. Haley & Aldrich, Inc., 2003b, Groundwater Monitoring Work Plan 2004, Former C-6 Facility, Los Angeles, California, Prepared for Boeing Realty Corporation, Long Beach, California, dated 31 October, 2003.

G:\Projects\ENVIRONMENTAL\28882_C6ProjectMngmt\600 Project Management\Well Replacement\Final Well Replacement Work Plan 033104.doc

FIGURES



28882-604



APPENDIX A

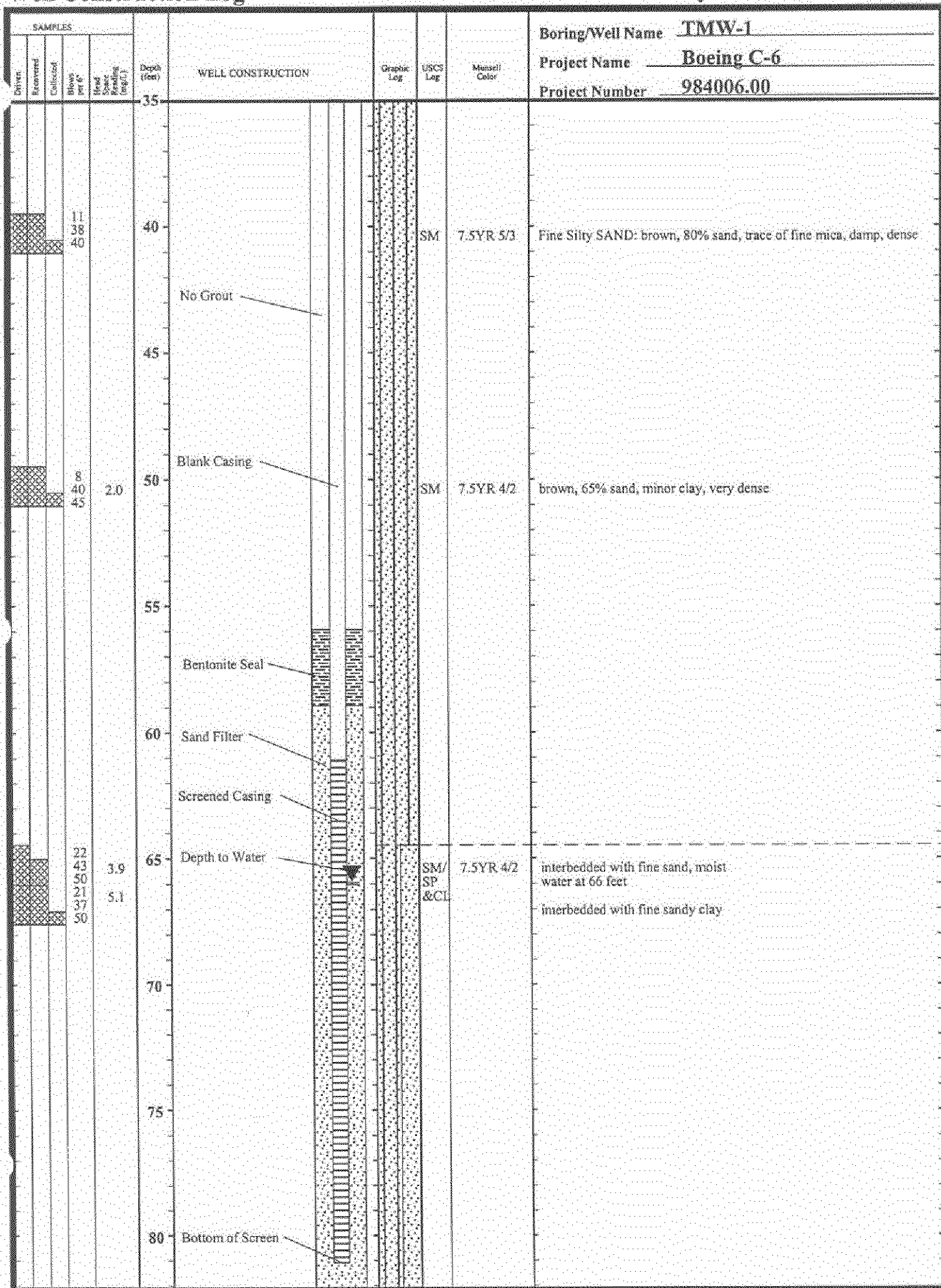
Well Construction Logs of Wells to be Closed

Kennedy/Jenks Consultants

BOE-C6-0009312



Well Construction Log

Kennedy/Jenks Consultants



Well Construction Log

Kennedy/Jenks Consultants

SAMPLES					Depth (feet)	WELL CONSTRUCTION	Graphic Log	USCS Log	Munsell Color	Boring/Well Name <u>TMW-1</u>	Project Name <u>Boeing C-6</u>	Project Number <u>984006.00</u>
Drill Type	Recovered	Left Hand	Right Hand	Head Space Reading (inches)								
					80	Bottom of Screen				Fine Silty SAND (continued)		
					85	Bottom of Well				Boring Terminated at 86 feet.		
					90							
					95							
					100							
					105							
					110							
					115							
					120							
					125							

Well Construction Log

Kennedy/Jenks Consultants

BORING LOCATION Building 1		Boring/Well Name TMW-2	
DRILLING COMPANY West Hazmat		Project Name Boeing C-6	
DRILLING METHOD (S) CME 75, Hollow Stem Auger		Project Number 984006.00	
BLANK CASING 2" PVC Schedule 40		FROM +1 TO 62 FT	ELEVATION Not Surveyed
PERFORATED CASING 2" PVC Schedule 40, 0.010" slot		FROM 62 TO 82 FT	TOTAL DEPTH 87 ft.
SIZE AND TYPE OF FILTER PACK Lonestar 2/12 Sand		FROM 57 TO 87 FT	DATE STARTED 6/28/98
SEAL Enviroplug Medium Bentonite Chips		FROM 51 TO 57 FT	DATE COMPLETED 6/28/98
GROUT No Grout (Temporary Well)		DEPTH TO WATER 67.0 ft.	
		LOGGED BY J. Knight	
		SAMPLING METHODS 2" Split Barrel Sampler, 140 lb. Hammer	
		WELL COMPLETION <input type="checkbox"/> SURFACE HOUSING NONE <input type="checkbox"/> STAND PIPE _____ FT	

SAMPLES					Depth (feet)	WELL CONSTRUCTION	Graphic Log	USCS Log	Munsell Color	SOIL DESCRIPTION AND DRILLING REMARKS
Driven	Recovered	Collected	Boys per ft.	Head Space (inches)						
										Concrete, 6"
								CL	2.5Y 4/4	Silty CLAY: olive brown, slightly moist, stiff
					5			ML	10YR 4/6	Clayey SILT: dark yellowish brown, slightly moist, stiff
					10				2.5Y 4/4	olive brown, hard
			17 26 31	100						
					15					
					20				2.5Y 5/4	decreasing clay, very stiff
			10 13 30	104						
					25					
					30					
			12 21 31	190						
					35					

Well Construction Log

Kennedy/Jenks Consultants

SAMPLES					Depth (feet)	WELL CONSTRUCTION	Graphic Log	USCS Log	Munsell Color	Boring/Well Name <u>TMW-2</u>	Project Name <u>Boeing C-6</u>	Project Number <u>984006.00</u>
Driven	Recovered	Collected	Blows per foot	Test Result Reading (psi/L)								
			5 15 17	183	35					Clayey SILT (continued)		
					40					some fine sand, and some thin sand lenses, very stiff		
					43					change noted by driller at 43'		
					45	No Grout						
					50	Blank Casing						
			17 25 32	354	50		SM	2.5Y 5/6		Silty SAND: light olive brown, fine, slightly moist, dense		
					55	Bentonite Seal						
					58					change noted by driller at 58'		
			18 50 50 50 50		60		ML	2.5Y 5/6		Sandy SILT: light olive brown, fine, moist, hard		
					63	Sand Filter				increasing sand		
					65	Screened Casing						
			20 23 30	2025	65	Depth to Water				very moist, hard, some clayey lenses		
			50		67		SM	2.5Y 4/3		water at 67' Silty SAND: olive brown, fine, wet, with lenses of clayey silt		
					70							
					75							
					80	Bottom of Screen						

Well Construction Log

Kennedy/Jenks Consultants

SAMPLES					Depth (feet)	WELL CONSTRUCTION	Graphic Log	USCS Log	Munsell Color	Boring/Well Name	Project Name	Project Number
Drain	Recovered	Collected	Blow per ft.	Head Space Reading (inches)								
					80	<p>Bottom of Screen</p> <p>Bottom of Well</p>				TMW-2	Boeing C-6	984006.00
					85					Silty CLAY (continued)		
					90							
					95							
					100							
					105							
					110							
					115							
					120							
					125							

Boring Terminated at 87 feet.

Well Construction Log

Kennedy/Jenks Consultants

BORING LOCATION Outside and East of Building 1		Boring/Well Name TMW-8	
DRILLING COMPANY West Hazmat	DRILLER Ruben Lares	Project Name Boeing C-6	
DRILLING METHOD (S) CME 75, Hollow Stem Auger	DRILL BIT (S) SIZE 8"	Project Number 984006.00	
BLANK CASING 2" PVC Schedule 40	FROM +1 TO 61 FT	ELEVATION Not Surveyed	TOTAL DEPTH 86 ft.
PERFORATED CASING 2" PVC Schedule 40, 0.010" slot	FROM 61 TO 81 FT	DATE STARTED 6/29/98	DATE COMPLETED 6/29/98
SIZE AND TYPE OF FILTER PACK Lonestar 2/12 Sand	FROM 59 TO 85.5 FT	DEPTH TO WATER 66.4 ft.	
SEAL Enviroplug Medium Bentonite Chips	FROM 55.8 TO 59 FT	LOGGED BY M. Balderman	
GROUT No Grout (Temporary Well)	FROM TO FT	SAMPLING METHODS 2" Split Barrel Sampler, 140 lb. Hammer	WELL COMPLETION <input type="checkbox"/> SURFACE HOUSING NONE <input type="checkbox"/> STAND PIPE FT

SAMPLES				Depth (feet)	WELL CONSTRUCTION	Graphic Log	USCS Log	Munsell Color	SOIL DESCRIPTION AND DRILLING REMARKS
Driven	Recovered	Collected	Blow Count (per ft)						
			6 30 32				CL	7.5YR 4/3	Asphalt, 3"
			8 18 40	5					Silty CLAY with minor Fine Sand: brown, local fine to coarse sand partings, damp, stiff
			27 50	10			CL	7.5YR 4/4	brown, hard
			8 20 23	20			ML	2.5Y 4/3	Clayey SILT: olive brown, 20% fine sand, damp, stiff
			7 14 30	30	No Grout				scattered carbonate nodules to 1/4"
				35					

Well Construction Log

Kennedy/Jenks Consultants

SAMPLES					Depth (feet)	WELL CONSTRUCTION	Graphic Log	USCS Log	Munsell Color	Boring/Well Name	Project Name	Project Number
Direct	Recovered	Collected	Blow per foot	Head Spec. Reading (mg/L)								
					35					TMW-8	Boeing C-6	984006.00
										Sandy SILT (continued)		
			12 20 30		40			ML	2.5Y 5/3	Fine Sandy SILT: light olive brown, minor clay, 30% fine sand, damp, dense		
						No Grout						
			13 22 33		50	Blank Casing		SM	2.5Y 5/4	Fine Silty SAND: light olive brown, 70% sand, trace of fine mica, damp, dense		
					55							
						Bentonite Seal						
					60	Sand Filter						
						Screened Casing						
			15 34 45 18 23 50		65	Depth to Water			2.5Y 4/4	olive brown, moist to wet water at 66' interbedded clayey silt from 66.5 to 67.5, then silty sand as above		
					70							
					75							
					80	Bottom of Screen						

Well Construction Log

Kennedy/Jenks Consultants

SAMPLES					Depth (feet)	WELL CONSTRUCTION	Graphic Log	USCS Log	Munsell Color	Boring/Well Name <u>TMW-8</u> Project Name <u>Boeing C-6</u> Project Number <u>984006.00</u>
Driven	Recovered	Collected	Blows per ft.	Head Space Reading (inches)						
					80					Fine Silty SAND (continued)
					85		Bottom of Well			
					90					
					95					
					100					
					105					
					110					
					115					
					120					
					125					

Boring Terminated at 85.5 feet

Well Construction Log

Kennedy/Jenks Consultants

BORING LOCATION Building 1		Boring/Well Name TMW-9	
DRILLING COMPANY West Hazmat		Project Name Boeing C-6	
DRILLER Ruben Lares		Project Number 984006.00	
DRILLING METHOD (S) CME 75, Hollow Stem Auger		DRILL BIT (S) SIZE 8"	
BLANK CASING 2" PVC Schedule 40		FROM +1 TO 61 FT	ELEVATION Not Surveyed
PERFORATED CASING 2" PVC Schedule 40, 0.010" slot		FROM 61 TO 81 FT	TOTAL DEPTH 86 ft.
SIZE AND TYPE OF FILTER PACK Lonestar 2/12 Sand		FROM 59 TO 86 FT	DATE STARTED 6/30/98
SEAL Enviroplug Medium Bentonite Chips		FROM 56.5 TO 59 FT	DATE COMPLETED 6/30/98
GROUT No Grout (Temporary Well)		LOGGED BY J. Knight	SAMPLING METHODS 2" Split Barrel Sampler, 140 lb. Hammer
			WELL COMPLETION <input type="checkbox"/> SURFACE HOUSING NONE <input type="checkbox"/> STAND PIPE _____ FT

Drain	Recovered	Collected	Flow Rate gpm	Head Space Reading (ft)	Depth (feet)	WELL CONSTRUCTION	Graphic Log	USCS Log	Munsell Color	SOIL DESCRIPTION AND DRILLING REMARKS
		12 14 21		52.0				ML	10YR 4/6	Concrete, 8" Clayey SILT: dark yellowish brown, trace of fine sand, slightly moist, very stiff
		12 22 40		86.0	5			CL	10YR 3/6	Silty CLAY: dark yellowish brown, some fine sandy lenses, slightly moist, hard
		27 30 30		85.7	10				10YR 5/4	yellowish brown, dry, hard
		12 17 23		48.2	20			ML	2.5Y 5/4	Clayey SILT: light olive brown, trace of fine sand, dry, very stiff
		21 28 50		51.4	30			ML	2.5Y 5/6	Sandy SILT: light olive brown, fine sand, slightly moist, hard
					35					

Well Construction Log

Kennedy/Jenks Consultants

SAMPLES					Depth (feet)	WELL CONSTRUCTION	Graphic Log	USCS Log	Munsell Color	Boring/Well Name	Project Name	Project Number
Driven	Recovered	Collected	Blows per ft.	Test Static Reading (in./L)								
			20 25 30	74.1	35					TMW-9	Boeing C-6	984006.00
										Sandy SILT (continued)		
					40			SM	2.5Y 5/6	Silty Fine SAND: light olive brown, slightly moist, dense		
						No Grout						
			23 30	114	50	Blank Casing				increasing silt content, very dense		
					55							
						Bentonite Seal						
					60	Sand Filter						
						Screened Casing						
			12 32 50 42 30 32	159	65	Depth to Water		SM	2.5Y 4/3	SAND with Silt: olive brown, fine, very moist, very dense, with silt lenses water at 66'		
					70							
					75							
					80	Bottom of Screen						

Well Construction Log

Kennedy/Jenks Consultants

SAMPLES					Depth (feet)	WELL CONSTRUCTION	Graphic Log	USCS Log	Munsell Color	Boring/Well Name <u>TMW-9</u> Project Name <u>Boeing C-6</u> Project Number <u>984006.00</u>
Driven	Recovered	Collected	Flow per ft	Head, Static Reading (mg/L)						
					80					SAND with Silt (continued)
					85		Bottom of Well			
					90					Boring Terminated at 86 feet.
					95					
					100					
					105					
					110					
					115					
					120					
					125					